



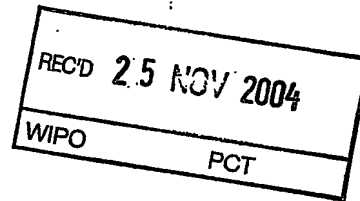
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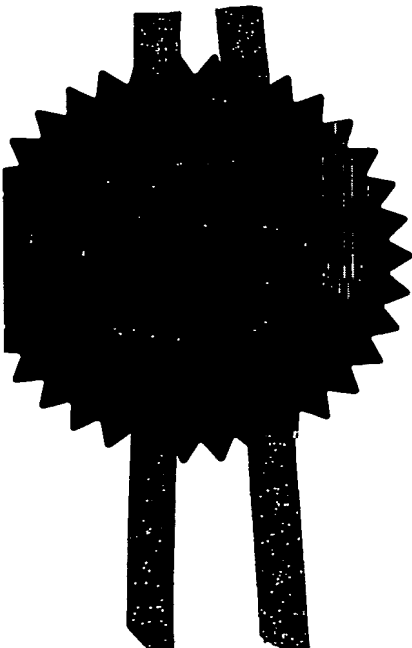


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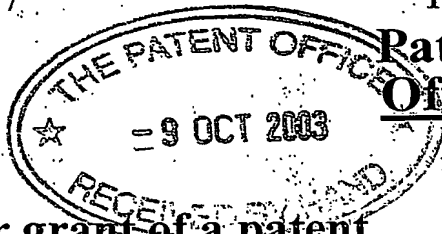
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Patents Form 1/77

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1. Your reference JIM/LJ/P21869GB
9 OCT 2003

2. Patent application number
(The Patent Office will fill in this part) 0323668.4

3. Full name, address and postcode of the or of
each applicant (underline all surnames)
NESTEC SA
CASE POSTALE 353
CH-1800 VEVEY
SWITZERLAND

Patents ADP number (if you know it)

If the applicant is a corporate body, give the
country/state of its incorporation

SWITZERLAND

1255063002

4. Title of the invention
FAT-BASED CONFECTIONERY PRODUCT COATED WITH A FILM FORMING AGENT
MAKING IT RESISTANT TO HEAT AND SHAPE STABLE TO HEAT

5. Name of your agent (if you have one) ELKINGTON AND FIFE

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)
ELKINGTON AND FIFE
PROSPECT HOUSE
8 PEMBROKE ROAD
SEVENOAKS
KENT
TN13 1XR

Patents ADP number (if you know it) 67004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of Filing (day/month/year)
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of Filing (day/month/year)
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Patents Form 1/77

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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if: YES

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b) there is an inventor who is not named as an applicant, or
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See note (d)

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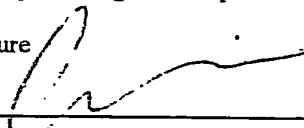
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11. I/We request the grant of a patent on the basis of this application.

Signature



Date

9 October 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

THE J. I. NASHBURY
LONDON

Fat-based confectionery product coated with a film forming agent making it resistant to heat and shape stable to heat.

Field of the invention

5 The present invention relates to coated fat-based confectionery food products.

Background of the invention

10 It is known to have inclusions such as nuts, raisins, seeds, corn flakes, cookie bits dispersed in various food products like chocolate, cookies, ice cream, yoghurt, etc, in order to give pleasant organoleptic characteristics to said food product.

In our co-pending application EP-A-781510, we disclose a process to make shaped chocolate pieces dispersed in or scattered on confectionery. The confectionery is a frozen, chilled or ambient confectionery, such as ice cream. The shaped pieces may be inserted into the ice cream using standard equipment without damage by reducing their temperature below 20 or even 15°C. Those shaped pieces can not be heated without losing their shapes.

15 US 5344664 to Kraft discloses low fat chips dispersed in baked goods. The formulation of the chips is especially designed to avoid shape losses when the chips are submitted to warm temperatures. Those chips retain their shapes during baking due to the low content of fat, i.e. less than 10%.

20 EP 909824 to Saint-Louis Sucre discloses the use of a coating to prevent sucrose-based granules from dissolving in water containing products. The sucrose-based granules are fat-free or low-fat.

25 EP 861603 to Quaker Oats discloses the coating of a snack product with a heat sensitive material and further with a protective coating. In that case, there are no discrete and individualised pieces dispersed into or onto the snack product, but a single layer of a sensitive material enrobing the whole snack.

30 Film coating is a process of depositing a thin layer of material onto a substrate. It is extensively used in the pharmaceutical industry for coating drugs in single dose form, e.g. tablets. Generally the coatings are applied to protect the drug against light, moisture and oxygen and to mask unpleasant taste or odour. They also can be used to colour the tablets as a form of identification.

35 Film coating is distinct from hard and soft sugar panning. In hard sugar panning, successive layers of saturated sugar syrup are spread on tablets or other substrates while they tumble in a revolving drum. The tumbling action spreads the syrup over the

surface which then crystallises to form a hard sugar shell. Hard sugar panning is used in both the pharmaceutical industry and the confectionery industry. An example of a hard sugar-panned product is Nestlé Smarties ®. In soft sugar panning, a non-crystallising sugar syrup is spread on tablets or other substrates while they tumble in a revolving drum. Once the syrup has spread, powder, formally including crystalline sugar, is dosed into the pan to adhere to the wet surface and form the coating. Jelly Beans are an example of a soft sugar panned product. Sugar panned coatings are generally applied to fat based confectionery products at levels of greater than 10% final weight, and more usually between 30 and 50% final weight. Lower application levels produce a thin fragile shell and do not protect the fat based confectionery product within.

Applying sugar panned coatings to fat based confectionery changes the texture of the fat based confectionery which is not always desirable. Film coatings provide protection at much lower application levels and do not alter the texture of the coated material.

Summary of the Invention

The present invention relates to a fat-based confectionery product. Said fat-based confectionery product is coated with a film coating agent to make it resistant and able to retain its initial shape when submitted to heat. The coated fat-based confectionery product can be used in food products such as chocolate or flour-based baked products. It is resistant to heat and can withstand heating or even baking without losing its initial shape. The coating does not crack upon heating, and colour does not bleed from the coating into the food product.

Detailed Description of the Invention

The present invention relates to a confectionery food product. A film forming coating is applied to a fat-based confectionery product which is able to retain its initial shape when submitted to heat in a baking or heating process.

The visual appearance is a significant part of organoleptic acceptance of a food product.

There is also a need for a product which adds to the interest of children or consumers. A food product having dispersed therein recognisable shapes with contrasting colours, can be very attractive for children and for other consumers.

to heat and to prevent the said fat-based confectionery product from losing its initial shape when the product is submitted to temperatures higher than ambient. The coating does not alter the uniform texture of the heat sensitive fat-based confectionery. That coated fat-based confectionery product can then be used in tempered chocolate, or cookie dough to be baked for example.

In this invention, "fat-based confectionery product" or "fat-containing confectionery product" should be understood as referring to a dark, milk or white chocolate, or to a chocolate analogue containing direct cocoa butter replacements, stearines, coconut oil, palm oil, butter, or any mixture thereof; or as referring to confectioner's coatings used for covering cakes and comprising chocolate substitutes with cocoa butter replaced by a non-tempering fat, also called compounds; or "Caramac" (RTM) sold by Nestlé comprising non-cocoa butter fats, sugar and milk; nut pastes such as peanut butter and fat; praline among others. Fat-containing confectionery products may include sugar, milk derived components, and fat and solids from vegetable or cocoa sources, or any other usual ingredient for chocolate such as lecithin for example, in different proportions.

The film forming material used in our invention can be a cellulose-based material such as hydroxypropyl methyl cellulose (HPMC), methyl cellulose (MC), hydroxypropyl cellulose (HPC), carboxy methyl cellulose (CMC) or guar gum, locust bean gum, gum arabic, pectin, xanthan gum, modified starch, carrageenan, shellac, dextrans, maltodextrin, whey protein. Other water or alcohol based film coating materials can also be used.

By heat, we mean a temperature higher than 25°C and that can be as high as 100 or even 200°C.

The "fat-based confectionery" product or "fat-containing confectionery" product can be chocolate or chocolate analogue comprising direct cocoa butter replacements; confectioners' compound, nut pastes such as peanut butter; praline among others. The fat content of the fat-based confectionery product can be from 11 to 60%, more preferably 18 to 40% and most preferably 28-35%. The fat-based confectionery has a moisture content of less than 10%, more usually less than 5% by weight.

The shape of the fat-based confectionery product can be determined by extrusion die, drop depositing, forming rollers, tablet press, injection moulding, traditional moulding or by any other moulding method. In our co-pending patent application EP-A-0603467, a process is described for cold extruding of chocolate, which process enables a cost

effective production of large quantities of extruded shaped chocolate pieces. The fat-containing confectionery product of the present invention can be made according to the above mentioned "cold extrusion" process.

5 The shape of the fat-based confectionery product is preferably a recognisable shape. A recognisable shape is a shape which can be identified by a child or an adult as an object, an animal, a person, or a shape that can be named such as squares, balls or discrete pieces such as chips. Examples of recognisable shapes are animals, cartoon characters, vehicles, stars, hearts, numbers or letters of the alphabet, dinosaurs, witches hats among
 10 others. Example of cartoon characters are Mickey Mouse®, Donald Duck®, Miss Piggy®, and examples of animals are dinosaurs, lions, among others. If the fat-based confectionery product is made by cold extrusion process described here above, the shape can be flat sided, which means that at least one side of the fat-based confectionery is flat. The fat-based confectionery can also be flavoured and/or coloured and can
 15 comprise any other usual ingredient or additive for that type of product, such as lecithin for example.

The size of the fat-based confectionery product may vary and is such that the maximum dimension is not usually greater than 5 cm, preferably not greater than 3 cm, and more preferably not greater than 2 cm.

20 The coating material or film coating material is preferably a mixture of one or more film forming materials and optionally a plasticiser, a colouring and/or a flavouring. It is also also possible to add other ingredients such as sweeteners, minerals such as calcium or magnesium, vitamins, prebiotics or probiotics for example.

25 The primary film forming material can be a cellulose-based material such as hydroxypropyl methyl cellulose (HPMC), methyl cellulose (MC), hydroxypropyl cellulose (HPC), carboxy methyl cellulose (CMC) or guar gum, locust bean gum, gum arabic, pectin, xanthan gum, modified starch, dextrans, maltodextrin, carrageenan, shellac, whey protein and/or any mixture thereof.

30 Secondary polymers can be chosen from the same group as the primary film forming materials. Other water or alcohol based film coating materials can also be used.

The film coating can comprise a plasticiser to improve the mechanical properties of the film. The plasticiser can be propylene glycol, polyethylene glycol, stearic acid, sodium

Polysorbate 80, lecithin and stearic acid also improve the dispersability of the coating onto the fat based confectionery product.

The colouring can be any food colouring or mixes thereof. Typically lake pigments are used as colouring materials in film coating, but dyes can also be applied. For example a green colour can be made by mixing E104 and E133 ; orange colour with E104, E124, E129, E133, E171; yellow colour with E104, E129, E133, E171; blue colour with E133 and red colour with E104, E124, . Opalescent effects can also be achieved using pigments such as Candurin® from Merck.

The coating can also be flavoured with one or more food flavouring such as chocolate, vanilla, orange, strawberry, cherry, raspberry, nuts, tutti-frutti among others.

The fat-containing confectionery can be coated by any known process of coating, such as rotating pan, coating drum, spraying, fluid bed coating for example.

After the coating process, the amount of coating is preferably 0.01% to 10 % by weight of the coated fat-based confectionery product, more preferably 0.5 to 5 %, and even more preferably 0.5 to 3 %. The thickness of the coating onto the fat-based confectionery product is preferably from 0.1 μ m to 1 mm.

The coated fat-based confectionery product, which is heat sensitive before coating, is rendered shape stable and resistant to heat by the coating protection.

Usual fat-based confectionery products before coating are heat sensitive due to the melting of the fat and begin to lose their shape when the temperature is higher than 25°C. Moreover, if usual fat-based confectionery products are used as inclusions in a chocolate or in a baked product, or any other food product submitted to heat during their manufacturing process, there is usually a undesirable leak of colour from the fat-based confectionery product into the other food product (chocolate or baked product for example). In usual fat based confectionery products submitted to heat, another disadvantage is the cracks arising of the coating itself.

For example, it is not possible to put chocolate shapes into chocolate because mixing the chocolate shapes into the (hot) liquid tempered chocolate leads to a loss of shape of the chocolate inclusions. Until now, the only method of protecting chocolate shapes to allow them to be used as inclusions in a chocolate or in a baked product has been to hard sugar pan them, and even though, this has significant disadvantages. Adding hard

sugar panned chocolate lentil shapes such as Smarties® to chocolate tablets significantly alters the texture of the tablet. In addition, only a few shapes can be coated using the sugar panning process, as shapes with flat sides tend to stick together during sugar panning and concave surfaces are not properly coated.

5 These limitations do not occur with film coating.

Some attempts have also been made to use sugar to coat chocolate pieces in order to make them resistant to heat and to use them in baked products, but this has several disadvantages. Coating chocolate pieces in sugar significantly alters their texture. Furthermore, the protection offered by the sugar shell is poor. For example, Smarties®
10 can be dispersed in a cookie dough before baking. As the cookies are baked, the sugar coating begins to dissolve in the dough and the Smarties® lose their shapes. The sugar coating cracks as the chocolate expands with heat and there are leaks of colour from the coating into the dough as the dye in the sugar shell, or the coloured sugar shell itself, dissolves in the hot moist environment of the cookie dough. The final cookie after
15 baking is not visually attractive, the shape of the Smarties® is no longer regular, the sugar coating has cracked during baking and the colour of the Smarties® has bled into the cookie dough.

By coating the fat-based confectionery product with a film forming agent, the fat-based confectionery is made shape stable and resistant to heat without altering its texture. By
20 heat, we mean the temperatures normally attained during the manufacturing process of the various foods in which the fat-based confectionery can be used. Those temperature can vary from ambient temperature up to more than 200°C. In the tempering process for moulded or enrobed chocolate products, the tempered chocolate is produced at around 30°C. For chocolate-like materials where tempering is not required it may be desirable
25 to mix in coated fat-based confectionery product at temperature between 30°C and 40°C. The coated fat-based confectionery product of the present invention is able to be mixed into chocolate and chocolate-like materials at these temperatures without losing its shape, without colour bleed, without the coating cracking and without altering the texture of the chocolate or chocolate-like material once set.

30

In a cookie during baking, the temperature can vary from 60°C inside the dough to 200°C on the outside of the cookie. The coated fat-based confectionery product of the present invention is able to maintain its shape, without colour bleed, without the coating cracking and without altering the texture of the chocolate or chocolate-like material once set.

Therefore, the coated fat-based confectionery product keeps its initial shape even if it is used in a food which is heated during its manufacturing process. After coating, the fat-based confectionery product is also resistant to heat: there is no bleeding of colour from the fat-based confectionery product into the heated food product and the coating does not crack and remains intact. For example, the coated fat-based confectionery product can be put in cookie dough and is able to withstand the baking process. The baked cookie is visually attractive with its coloured inclusions : the initial shape of the fat-based confectionery is retained. There are no cracks in the coating of the coated fat-based confectioneries after baking and there is no bleed of colouring.

The coated fat-based confectionery can be dispersed into and/or scattered onto a food product. It can be used in various food products such as chocolate, confectionery products, baked products, ice cream, jelly, custard, soft nougat, etc. Baked products can be cookies, muffins, gingerbread, wafers, waffles or any other flour-based baked product. Other food products wherein the coated fat-based confectionery can be used may be cooked or culinary dish such as oriental dishes etc.

The preferred applications are the uses of the coated fat-based confectionery product in tempered chocolate, chocolate analogues or in baked goods. In a same food product there can be coated fat-based confectionery of various shapes, colours and flavours.

The number or proportion of coated fat-based confectionery product in and/or on the food product may be chosen as desired both for the visual and/or organoleptic effect. The proportion of coated fat-based confectionery product in and/or on the food product may be up to 50 percent of the final food product, such as from 1 to 50 g and conveniently from 2 to 20 g per 100 g of the food product.

Coated fat-based confectionery products of different colours or sizes or flavours can be added into or onto the same food product in order to provide a more attractive visual and organoleptic appearance.

The following examples are illustrative of some of the products falling within the scope of the present invention and methods of making the same. They are not to be considered in any way limitative of the invention. Changes and modifications can be made with respect to the invention. That is, the skilled person will recognise many variations in these examples to cover a wide range of formulas, ingredients, processing, and mixtures to rationally adjust the naturally occurring levels of the compounds of the invention for a variety of applications.

Examples

Example 1 – Preparation of white chocolate with fat-based stars inclusions.

The heat sensitive fat-based confectionery product is chocolate stars. The chocolate used for the production of the star shapes is a "Milky bar buttons"®. The chocolate stars

are made according to the cold extrusion process, as described in patent EP-A-781510. The chocolate stars are coated according to the following process. Various coating colourings can be applied so as to obtain coated chocolate stars of different colours.

The coating material is purchased from Sensient Colors UK Ltd. A solution containing 13% of hydroxypropyl methyl cellulose (HPMC), is prepared at least 30 minutes before the coating process beginning. A Wurster bottom spray coating unit from FluidAir US can be used. The coater is connected to an air conditioning unit, which supplies a cool and dry air, for example 20°C and 30% RH. A batch size of 50kg is coated at an application level of

1.5 to 2.0 % of weight of the finished product.

Once the chocolate stars are coated, they are heat resistant and they can retain their shapes when heated to temperatures at which the uncoated stars would deform. Coated chocolate stars are then incorporated with mixing in tempered Milky Bar ® white chocolate which contains cocoa butter, vegetable fat, sugar, full cream milk powder, whey powder, lecithin and vanillin. The tempered chocolate is then at temperature higher than 28°C. The final product is deposited in a mould before cooling. The chocolate stars keep their shapes during the whole process, including heating, mixing, depositing and cooling and there are no cracks in the coating and no leak of the stars' colouring into the white Milky Bar chocolate and the chocolate tablet has a uniform texture.

Example 2 - Cookies with "Semi-Sweet Morsels" inclusions are produced.

Toll-House Semi-sweet Morsels® are produced with the following ingredients : sugar, cocoa liquor, cocoa butter, milk fat, soy lecithin, vanillin, artificial flavouring, natural flavouring.

12% film forming modified starch, 6% dextrin and 5% lecithin are mixed into water to a ~~total of 100%~~. ~~Like colours can also be dispersed in this film coating solution. The film~~

batch size of 50kg is coated at an application level of 1.5 to 2.0 % of weight of the finished product.

The cookie dough was prepared according to the following recipe :

5. - 2 ¼ cups all-purpose flour
- 1 tea spoon baking soda
- 1 tea spoon salt
- 1 cup or 2 sticks of softened margarine or butter
- ¾ cup packed brown sugar
- 10 - 1 tea spoon vanilla extract
- 2 large eggs
- 1 cup chooped nuts
- ¾ cup granulated sugar.
- 2 cup of coated Nestlé Toll House Semi Sweet Morsels ®
- 15 Combine flour, baking soda and salt in a mixer. Separately, beat butter, granulated sugar, brown sugar and vanilla extract until creamy. Add eggs one at a time, beating well after each addition. Gradually beat in flour mixture. Stir in coated Toll House Semi Sweet Morsels ® and nuts. Deposit onto ungreased baking moulds, sheets or belt. Bake for 9 to 11 minutes until golden brown at 190-200°C. Cool for 2 minutes before
- 20 demoulding. Remove to wire racks to achieve complete cooling. The Toll House Semi Sweet Morsels ® keep their shapes during the whole process, including mixing, depositing, baking and cooling and there is no leak of colouring from the coating into the cookie dough.

Claims

1. A fat-based confectionery product coated with a film forming agent characterised in that the coated fat-based confectionery product is heat shape stable and heat resistant.
- 5
2. A coated fat-based confectionery product according to claim 1 wherein the film forming coating agent is a cellulose-based material such as hydroxypropyl methyl cellulose, methyl cellulose, hydroxypropyl cellulose, carboxy methyl cellulose and/or gum such as guar gum, locust bean gum, gum arabic, pectin, xanthan gum, and/or
- 10 modified starch, dextrans, maltodextrin, carrageenan, shellac, whey protein, alcohol-based coating material, other water-based film former and/or any mixture thereof.
3. A coated fat-based confectionery product according to claim 1 or claim 2 which further comprises a plasticiser.
- 15
4. A coated fat-based confectionery product according to any of the preceding claims in which the plasticiser is polyethylene glycol, stearic acid, sodium citrate, triethyl citrate, glycerol, propylene glycol, glucose syrup, invert syrup, dextrose, fructose, high fructose corn syrup and/or any mixture thereof.
- 20
5. A coated fat-based confectionery product according to any of the preceding claims which further comprises a detackifier which can be polysorbate 80, lecithin, stearic acid, corn starch or talc and /or any mixtures thereof.
- 25
7. A coated fat-based confectionery product according to any of the preceding claims wherein the film coating comprises one or more food colouring and/or flavouring.
8. A coated fat-based confectionery product according to any of the preceding claims wherein the film coating is 0.01% to 10% by weight of the fat-based confectionery
- 30 product, more preferably 0.5 to 5 %, and even more preferably 0.5 to 3 % .

6. A coated fat-based confectionery product according to any of the preceding claims wherein the film coating is 0.01% to 10% by weight of the fat-based confectionery product, more preferably 0.5 to 5 %, and even more preferably 0.5 to 3 % .

5 11. A coated fat-based confectionery product according to any of claims 1 to 10 wherein the fat-based confectionery products have specific characteristic shapes such as animals, cartoon characters, vehicles, stars, numbers, letters of the alphabet, hearts, witches hats, chips, balls or any other identifiable shape or discrete pieces.

12 A coated fat-based confectionery product according to claim 1 or 10 wherein the fat-based confectionery product has a uniform texture.

10 13. A coated fat-based confectionery product according to any one of claims 7 to 12 wherein the colouring does not bleed from the coating into or onto the food product.

14. The use of a coated fat-based confectionery product according to any one of claims 1 to 13 in or on a food product submitted to heat.

15 15. The use of a coated fat-based confectionery product according to claim 14 wherein heat is more than 25°C; and preferably more than 28°C.

20 16. The use of a coated fat-based confectionery product according to claim 14 wherein heat is more than 100°C.

17. A food product comprising a coated fat-based confectionery product according to any of the preceeding claims.

25 18. A food product according to claim 17 in which the food product is chocolate, chocolate substitute or chocolate analogue.

30 19. A food product according to claim 17 in which the food product is cookie, biscuit, muffin or any other flour-based baked food submitted to baking.

Abstract

5 This invention concerns a fat-based confectionery product which is coated with a film forming agent and characterised in that it is heat resistant and in that it retains its shape when submitted to heat. This invention also discloses the use of this coated fat-based confectionery in food product, as well as a food product comprising this coated fat-based confectionery, especially chocolate or baked food.

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